

## **SANDIA REPORT**

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# **Sandia National Laboratories, California Cultural Resources Management Plan**



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# **Sandia National Laboratories, California Cultural Resources Management Plan**

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## **Abstract**

The SNL/CA Cultural Resources Management Plan satisfies the site's Environmental Management System requirement to promote long-term stewardship of cultural resources. The plan summarizes the cultural and historical setting of the site, identifies existing procedures and processes that support protection and preservation of resources, and outlines actions that would be initiated if cultural resources were discovered onsite in the future.

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# Executive Summary

The Sandia National Laboratories, California (SNL/CA) Cultural Resources Management Plan (CRMP) was prepared in accordance with the U.S. Department of Energy (DOE), *Environmental Guidelines for Development of Cultural Resource Management Plans – Update*. The SNL/CA CRMP is comprised of seven sections. Because there are no identified cultural resources at SNL/CA, each section is brief and tailored around inadvertent discovery of buried resources.

## 1 Introduction

Sandia National Laboratories (SNL) is one of three national laboratories supporting the DOE statutory responsibilities for nuclear weapon research and design, development of energy technologies, and basic scientific research. SNL/CA is a multi-program engineering and science laboratory supporting the nuclear weapons stockpile program, energy and environment research, homeland security, micro- and nano-technologies, and basic science and engineering research.

On September 22, 2004, the DOE Office of Environment, Safety and Health issued *Environmental Guidelines for Development of Cultural Resource Management Plans – Update* (DOE 2004). These guidelines outline a suggested format for a site-specific CRMP. The requirement for a site-specific CRMP is identified in DOE directive DOE P 141.1, *Management of Cultural Resources* (DOE 2001). Although this directive is not specifically listed in the management and operating contract for Sandia National Laboratories, the requirement for protection of cultural resources is included in DOE Order 450.1, *Environmental Protection Program* (DOE 2005). Order 450.1 became effective for all Sandia National Laboratories (SNL) facilities on August 21, 2003 through incorporation into the Sandia management and operating contract. Order 450.1 requires implementation of sound stewardship practices that are protective of environmental resources (including cultural resources) through an Environmental Management System. DOE considers Order 450.1 the directive under which the policies established in DOE P141.1 should be implemented (DOE 2004). The SNL/CA CRMP follows DOE guidelines but is tailored to inadvertent discovery of buried resources, as there are no known cultural resources at SNL/CA.

## **2 Cultural Resource Management Goals**

SNL/CA has identified the following two cultural resource management goals. SNL/CA will review these goals at least every five years. Additions and updates will be made as needed to reflect current conditions on site and regulatory changes.

Goal 1: protect and preserve cultural resources found on site.

Goal 2: comply with laws, regulations, Executives orders, and DOE directives related to cultural resources.

## **3 Existing Site Conditions**

### **3.1 Facility and Program Descriptions**

SNL/CA was established in 1956 by Sandia Corporation to provide a closer relationship with Lawrence Livermore National Laboratory (LLNL) and their nuclear weapons design work. The SNL/CA facility evolved into an engineering research and development laboratory by the early 1960s, and into a multi-program engineering and science laboratory during the 1970s. As international arms control efforts increased in the late 1970s and throughout the 1980s, the United States emphasized treaty monitoring, safety, security, and control of the national nuclear weapons stockpile. With the end of the Cold War in the late 1980s, the role of SNL/CA to support stockpile stewardship ensuring nonproliferation and continued safety, security, and reliability, took on greater importance.

SNL/CA is located approximately 40 miles east of San Francisco, near the City of Livermore in eastern Alameda County. The site lies at the western base of the Altamont Hills on relatively flat terrain with low relief sloping gently northwest and north. Figure 1 shows the regional location of the site.

SNL/CA occupies 410 acres. The main campus (134 acres) is surrounded on the east, south and west by undeveloped land (Figure 2, Site Map). To the north of SNL/CA are East Avenue and LLNL. Land use to the east and south of the site is agricultural and low-density residential. To the west of SNL/CA, construction continues on a residential development that began in 2003.



### Figure 1 Regional Location Map

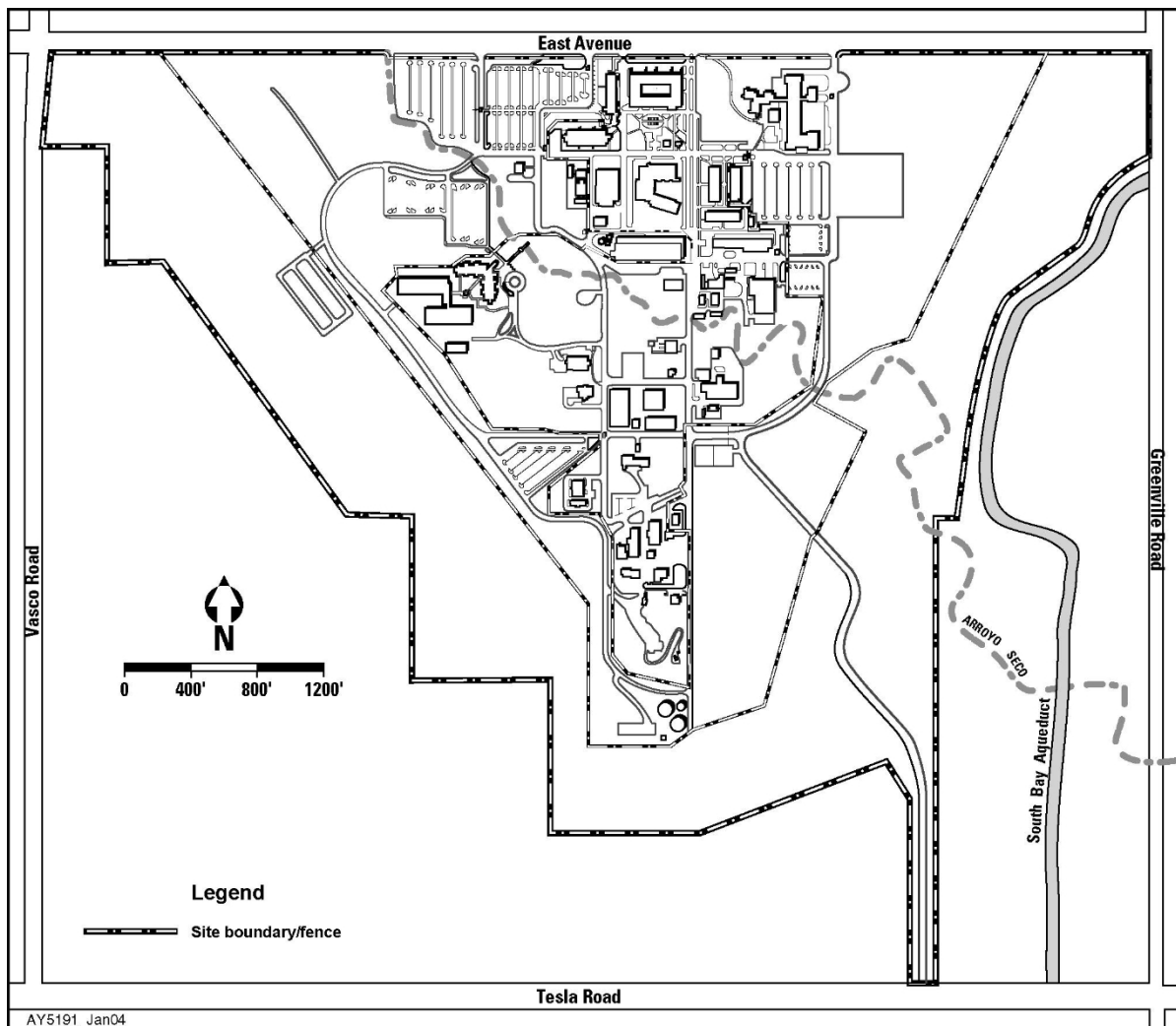


Figure 2 SNL/CA Site Map

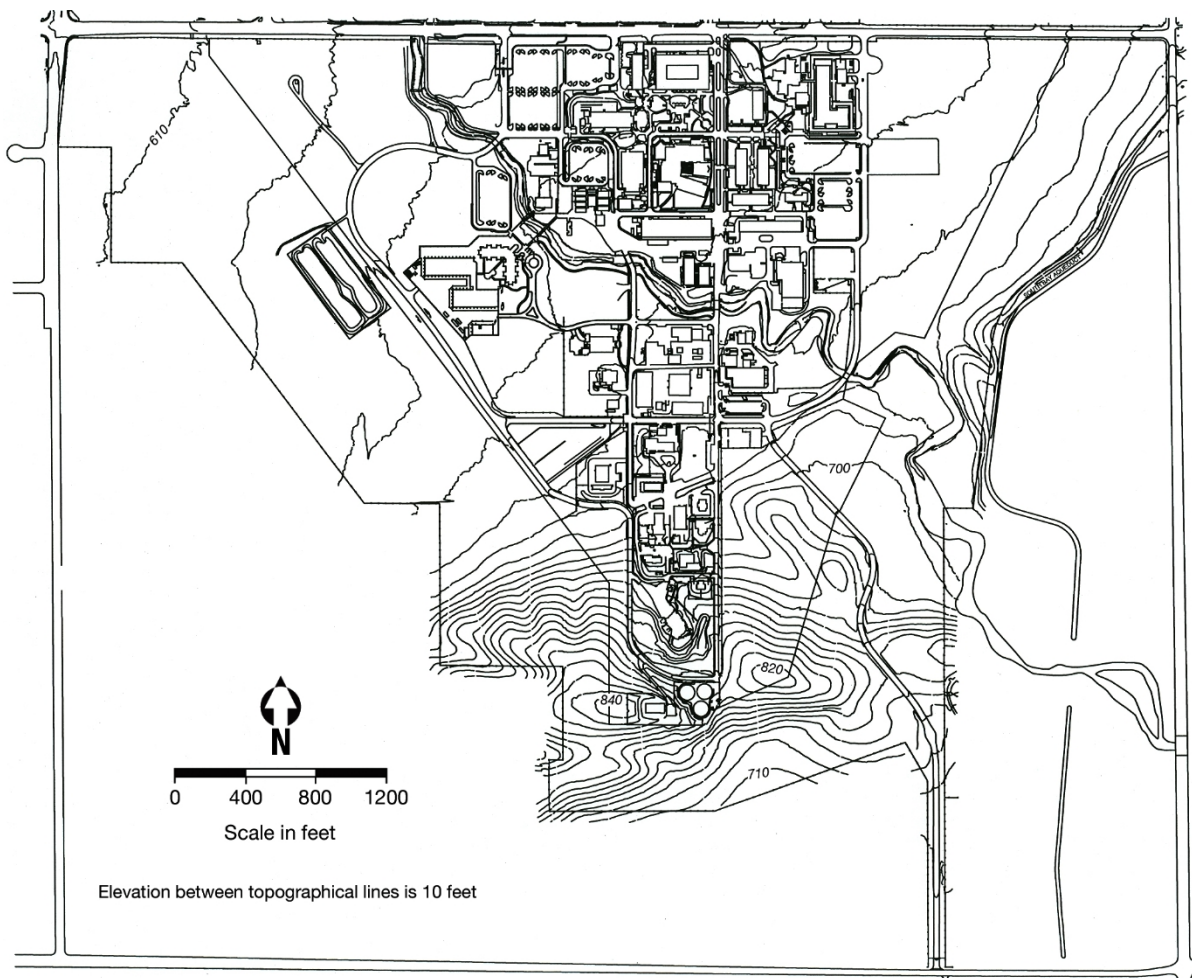
## 3.2 Environmental Setting

The following summarizes the environmental setting at SNL/CA. Additional information can be found in the *Final Site-wide Environmental Assessment of the Sandia National Laboratories/California* (DOE 2003).

### 3.2.1 Geology and Soils

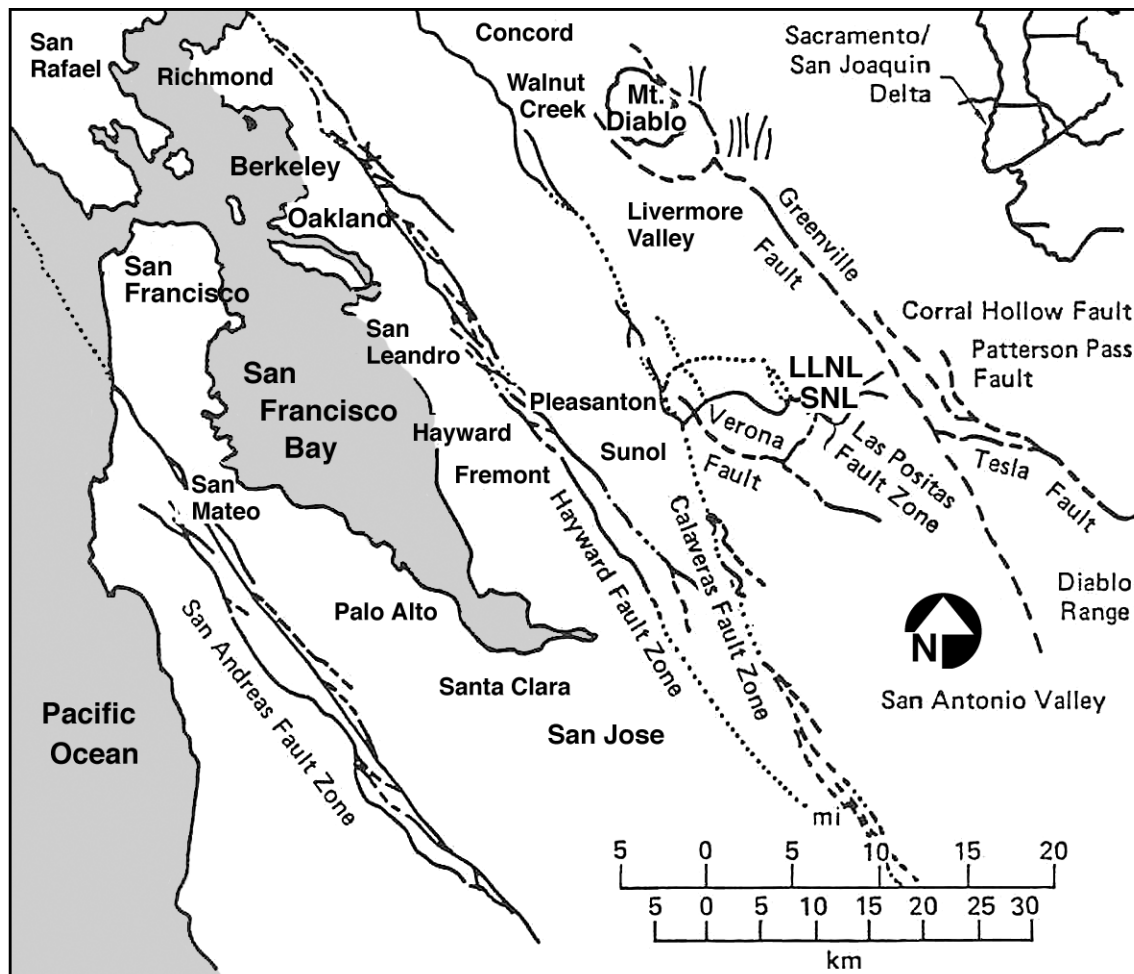
SNL/CA is located in the California Coast Ranges geologic province in the southeastern portion of the Livermore Valley. The valley forms an irregularly shaped lowland area about 16 miles long, east to west, and 7 to 10 miles wide, north to south. The land at SNL/CA slopes gently to the northwest and north, with steep terrain in the southern portion of the site and along the banks of Arroyo Seco. The site ranges in elevation from 615 feet above mean sea level at the northwest corner of the property to 849 feet at the southern end. Site topography is depicted on Figure 3.





**Figure 3 SNL/CA Topography**

SNL/CA is located in a seismically active region. The major fault systems in the area are the San Andreas Fault system and the much older Coast Range thrust fault system. The upper plate of the Coast Range thrust formed the northwest trending Coast Range, including the Altamont Hills. Any seismic activity in the Livermore Valley would probably result from movement on the San Andreas Fault, a right-lateral strike-slip fault system trending northwest-southeast, extending from Point Arena to the Gulf of California. The regional faults closest to SNL/CA, the Hayward, Calaveras, Greenville, and Tesla faults follow this trend, and have been seismically active in the historic past. A magnitude 5.8 earthquake on the Greenville fault in 1980 caused minor damage at SNL/CA and in the Livermore Valley. The Las Positas fault crossing SNL/CA is a transverse fault, at right angles to the Greenville fault, and was active during this earthquake. The Verona fault is a low angle thrust fault, dissimilar to the regional faulting, and probably not connecting with either the Calaveras or Las Positas faults. Only microseismicity was recorded on the Verona fault in 1980. These faults are shown on Figure 4.



**Figure 4 Regional Earthquake Faults**

Surface soils and arroyo sediments cover the SNL/CA site. Underlying soils at the site are formed primarily upon sediments deposited by local streams. Three soils cover most of SNL/CA: Rincon clay loam, Positas gravelly loam, and Livermore gravelly loam. There are no known mineral resources or fossil occurrences at the site.

### 3.2.2 Hydrology and Water Resources

Groundwater in the SNL/CA area occurs within saturated unconsolidated geologic material. Depth to groundwater varies from less than 20 feet on the eastern portion of the site to 126 feet on the west side of the site. Water bearing-units beneath the site are composed of shallow heterogeneous, unconsolidated alluvium and deep fluvial and lacustrine sediments. Groundwater near SNL/CA is generally suitable for use as domestic, municipal, agricultural, and industrial supply. However, some shallower groundwater may be of marginal quality and not suitable for industrial or agricultural purposes. Groundwater less than 300 feet deep is usually unsuitable for domestic use without treatment.

There are no perennial streams or natural surface water bodies at SNL/CA. The Arroyo Seco, an ephemeral and intermittent stream, diagonally traverses the site from southeast to northwest. The arroyo typically flows only in very wet years, and for short periods of time during heavy storms. A seasonal wetland that is wet well into June, and sometimes July, is located in the streambed along the eastern part of the arroyo. Storm water runoff at SNL/CA is conveyed to Arroyo Seco through a system of storm drains and channels. The Arroyo Seco and seasonal wetland are shown on Figure 5.

### **3.2.3 Climate and Meteorology**

The climate at SNL/CA is typical of the Mediterranean conditions in the San Francisco Bay region where cool, wet winters and hot, dry summers are normal. In the summer, inland valleys, such as the Livermore Valley, generally experience more sunshine and higher temperatures than the coastal areas. In the winter, temperatures in the valley are usually cooler than at the coast.

Meteorological data for the SNL/CA area is obtained from a meteorological tower located approximately one mile north at LLNL. The average annual rainfall near SNL/CA over the last five years was 11.83 inches. The windiest months in the area occur in the spring and summer, and are dominated by westerly sea breezes. The winds during the fall and winter are typically lighter and more varied in direction.

### **3.2.4 Ecology**

The plant community at SNL/CA is typical of the surrounding region, consisting primarily of grassland. Localized areas of coyote brush scrub, willow riparian woodland, and aquatic habitat are also present. Areas developed and disturbed by Sandia operations constitute an additional habitat type, designated altered habitat. Habitat types are depicted on Figure 5. No threatened, endangered, proposed, or candidate plant species are present onsite.

A variety of wildlife species live and forage at SNL/CA. Each year, the Environmental Planning and Ecology Program documents the wildlife species observed on site during that year in a wildlife survey report. As of October 2005, only two threatened wildlife species are present onsite, the California tiger salamander (*Ambystoma californiense*) and the California red-legged frog (*Rana aurora draytonii*). The site also provides nesting habitat for several special concern bird species.

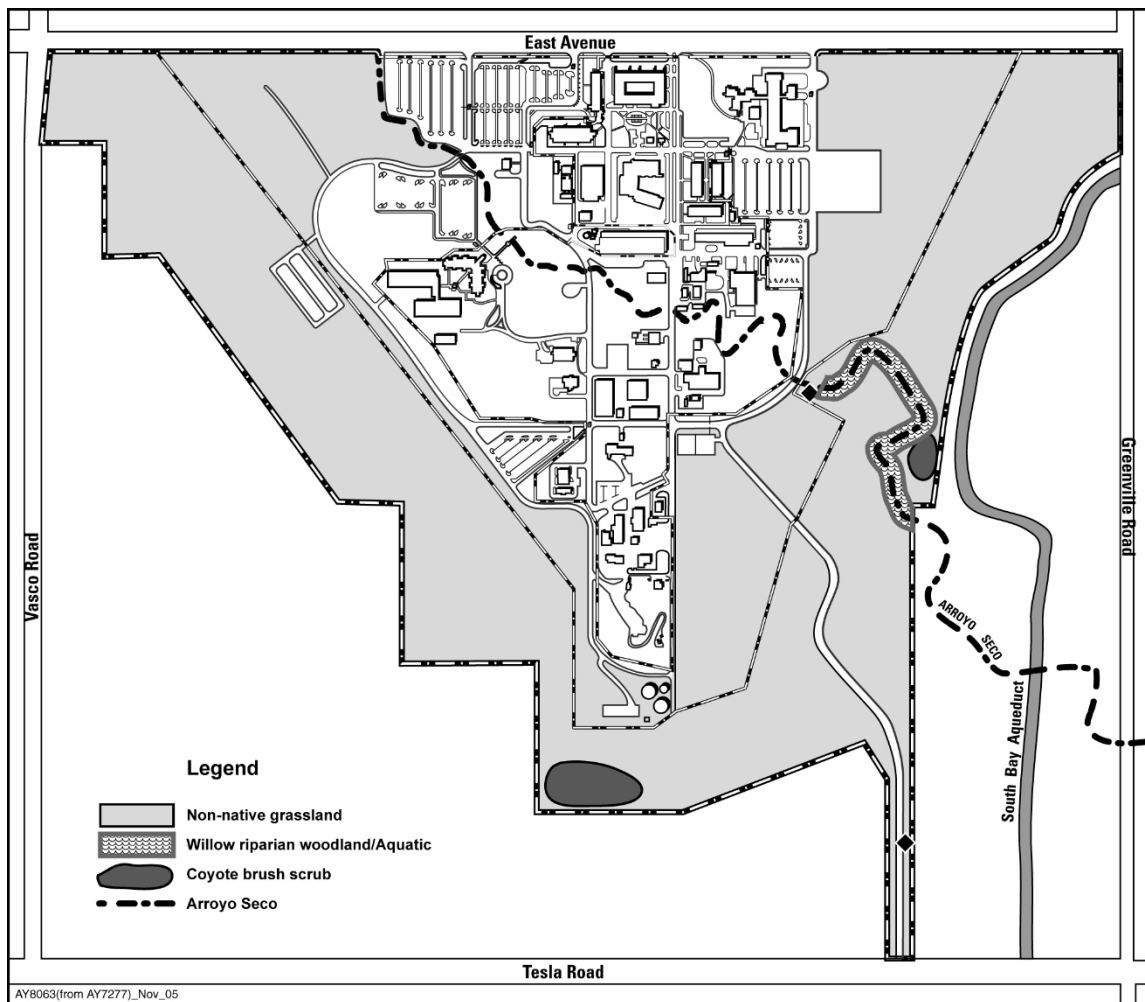


Figure 5 Habitat at SNL/CA

## 3.3 Cultural and Historical Setting

### 3.3.1 Archaeological Overview

In 1990, archaeological field inventory and literature reviews were completed for SNL/CA. The results of which are documented in the *Cultural Resources Assessment of Sandia National Laboratories Livermore Facility, Alameda County, California* (Basin Research Associates, Inc. 1990). The following provides a summary of the assessment report.

No prehistoric Native American sites have been recorded in the area now occupied by SNL/CA. The nearest prehistoric sites to SNL/CA are located approximately 2 miles south of the property along Arroyo Mocho. SNL/CA is located within the *Chochenyo* territory of the Costanoan Indians (or Ohlone). There are no known ethnographic resources<sup>1</sup> at the site.

<sup>1</sup> Ethnographic resources are traditional subsistence, sacred ceremonial, and religious resources with

The area now occupied by SNL/CA was likely used for livestock grazing during the Spanish period (1769 – 1821). During the Mexican period (1821 – 1846) and into the American period, the area was located within mostly ungranted lands. An 1869 Plat Survey shows the northwest corner of the property as part of Rancho Las Positas. SNL/CA may have been intersected by part of the El Camino Viejo (the Old Road) as a portion of the route followed Arroyo Seco. No structures from the Hispanic era have been recorded on site.

### **3.3.2 SNL/CA Historic Context and Building Survey**

SNL/CA completed an historic review of SNL/CA facilities in 2001. The review consisted of developing an historic context for the site and evaluating site structures for historical significance. The Cold War is the dominant context for understanding nearly all of Sandia's history (SNL 2003). The *Cold War Context Statement, Sandia National Laboratories, California Site* addresses the relationship of SNL/CA properties to the national pattern of historical Cold War events. Structures evaluated for historical significance included permanent and semi-permanent buildings at least 1000 gross square feet (gsf) in size or buildings 50 years old or over. None of the SNL/CA buildings are historically significant and none have been determined to be eligible for the National Register (SNL 2002).

### **3.3.3 Legal Compliance Accomplishments**

In accordance with the federal regulations for implementing Section 106 of the National Historic Preservation Act (36 CFR 800), the DOE Sandia Site Office (DOE/SSO) submitted SNL/CA's historic building evaluation to the California State Historic Preservation Office (SHPO) in November 2004. DOE/SSO requested concurrence from the California SHPO that none of the buildings on site are historically significant and none are eligible for the National Register. The California SHPO did not object with this finding within the 30-day review period provided by 36 CFR 800.3(c)(4), indicating concurrence with DOE/SSO's finding.

## **4 Cultural Resource Management Methods**

### **4.1 Records and Reports**

SNL/CA manages cultural resource records in accordance with *OP471347, Administrative Procedures for Managing Sandia/CA ES&H Recorded Information* (SNL/CA 2005). This procedure incorporates corporate policies, requirements of the Records Management Manual, best business practices, program-specific regulatory requirements, and the requirements of the ISO 14001 standard for Environmental

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cultural meaning for contemporary native Americans.

Management Systems. Under this procedure, ES&H programs are responsible for transmitting recorded information to the SNL/CA ES&H Record Center for storage and protection. The Record Center establishes file guides for categories of records and assigns a file code number. The file guide describes the record, identifies the retention period, describes the disposition instructions (where applicable), and provides filing instructions. Record Center personnel log all transmitted records into an electronic database. Document titles, dates, authors, and key words are included in the database to assist with tracking and retrieval of records. The file code for cultural resource records is NE-207.

SNL/CA reports environmental compliance and program activities in annual site environmental reports. Cultural resource management activities are included in this annual report.

Because there are no known cultural resources at SNL/CA, the site has not established a recording and inventory system. If such a system is needed in the future to catalog cultural resource finds, Sandia will follow standard industry practice to inventory and number each item. A cultural resource record would be prepared that may include a site map showing the location of the find, photographs, inventory of items, and the circumstances surrounding the find.

## **4.2 Inventory**

There are no cultural resources at SNL/CA. The results of past cultural resource assessments are summarized in Section 3.3.

## **4.3 Excavation**

The methods for excavation of cultural resources unearthed inadvertently during construction activities will be determined when needed through consultation with a qualified archaeologist, relevant Native American tribes, DOE/SSO, and SNL/CA environmental management. Excavation methods will follow standard industry practices.

## **4.4 Structure and Facility Management**

There are no historically significant structures present at SNL/CA. The results of a recent building survey and evaluation are presented in Section 3.3.

## **4.5 Laboratory Treatment**

The methods for laboratory treatment of cultural resources unearthed inadvertently during construction activities will be determined when needed through consultation with a qualified archaeologist, relevant Native American tribes, DOE/SSO, and SNL/CA environmental management.

## **4.6 Curation**

The methods for curation of cultural resources unearthed inadvertently during construction activities will be determined when needed through consultation with a qualified archaeologist, relevant Native American tribes, DOE/SSO, and SNL/CA environmental management.

## **4.7 In-Situ Preservation**

The methods for in-situ preservation of cultural resources unearthed inadvertently during construction activities will be determined when needed through consultation with a qualified archaeologist, relevant Native American tribes, DOE/SSO, and SNL/CA environmental management.

## **4.8 Outreach**

SNL/CA does not currently have an outreach program specifically related to cultural resources because there are no known cultural resources on site. Outreach on general environmental issues is provided through the National Environmental Policy Act process, the Sandia external website, and reporting on environmental conditions in annual site environmental reports. Each of these avenues is used to provide information to the community and to solicit input from the community.

# **5 Cultural Resources Management Procedures and Administration**

## **5.1 Compliance Procedures**

A general procedure for preservation of cultural resources and historic properties is outlined in the Sandia National Laboratories Environment, Safety, and Health Manual (SNL 2005). This procedure requires suspension of earth-disturbing activities when potential historic objects or artifacts are found. SNL/CA also includes preservation procedures in specifications provided to contractors that are involved in earth disturbing activities. If buried cultural resources were discovered at SNL/CA, earth disturbing activities would be suspended, DOE/SSO would be notified, and activities to meet applicable requirements would be initiated. No specific procedures for consultation or compliance with individual statutes and regulations have been established for SNL/CA, as there are no known cultural resources onsite.

## 5.2 Administration

At SNL/CA, cultural resources management is part of the Environmental Planning and Ecology Program under the Environmental Management Department. The program lead serves as the site contact for cultural resource issues. If warranted by discovery of buried cultural resources, SNL/CA would coordinate compliance activities with the DOE/SSO, contract with appropriate cultural resource specialists, and solicit input from interested parties and stakeholders.

## 6 Supporting Documents

Because there are no known cultural resources at SNL/CA, there are no supporting documents to this CRMP at this time.

## 7 References

36 CFR Part 800, Advisory Council on Historic Preservation, Protection of Historic Properties.

16 USC 470, National Historic Preservation Act of 1966.

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SNL/CA 2005, OP471347, Administrative Procedures for Managing Sandia/CA ES&H Recorded Information, April 13, 2005.